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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,570	05/02/2001	Steve Wai Leung	25821p032	5623

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EXAMINER

LANEAU, RONALD

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 09/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/847,570

Applicant(s)

LEUNG ET AL.

Examiner

Ronald Laneau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Response to Amendment

1. The amendment filed on 3/18/03 has been entered. Claim 4 is canceled and claims 1-3 and 5-20 are now pending.

Allowable Subject Matter

2. The indicated allowability of claims 4-6, 9, 10, and 16 is withdrawn in view of the newly discovered reference(s) to Kim et al (US 6,373,457). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 5-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masazumi (US 6,414,669) in view of Kim et al (US 6,373,457).

As per claims 1, 5, and 6, Masazumi teaches a driving method for a liquid crystal display (LCD) device in which a liquid crystal exhibiting a cholesteric phase is sandwiched between two substrates having electrodes arranged in a matrix form on their substrates (col. 1, lines 12-17), providing pixels arranged in a matrix array (see abstract, line 7), providing a reset pulse and a select pulse signal is applied for every line (plurality of selection pulses) to provide pulse voltages of the waveforms (a), (b) and (c) shown in fig. 5 and the resulting (f) waveform applied

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to the liquid crystal (col. 23, line 60 to col. 25, line 3). Further, the selection pulse taught by Masazumi may consist of a pipeline and non-pipeline arrangement and also of partial rows that are pipelined and non-pipelined (fig. 5). Masazumi does not teach multiplex addressing driving waveform but Kim et al teach a multiplexer (multiplex addressing driving waveform) that selectively changes the signal in accordance with the switching control signal (fig. 3).

It would have been obvious to one of ordinary skill in the art to utilize the multiplex addressing driving waveform as taught by Kim et al into the device of Masazumi because it would reduce the voltage requirements for the driver circuits by providing the ability to multiplex address and data over a single bus and therefore decreasing power dissipation of the system.

As per claim 2, Masazumi teaches a select pulse signal for every line (plurality of selection pulses) wherein a pulse width modulation (PWM circuit) capable of varying the pulse width for reproduction of 256 gray scale levels (col. 19, lines 44-46).

As per claim 3, Masazumi teaches a select pulse signal for every line (plurality of selection pulses) that have variable amplitudes as claimed (see fig. 25).

As per claims 7 and 8, Masazumi teaches a reset pulse signal (col. 23, lines 65-66) and a reset voltage period (col. 10, line 61) but does not explicitly that the reset pulses are no smaller in value than the reset voltage and the reset pulses are greater than the reset voltage. It would have been obvious to one of ordinary skill in the art to specifically utilize the values of the reset pulses as claimed because it would obtain the needed amount of voltages for a cholesteric liquid crystal material to select the display state of the liquid crystal in every pixel thereby improving the matrix driving.

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As per claims 9 and 10, Kim et al teach a multiplexer (multiplex addressing driving waveform) that selectively changes the signal in accordance with the switching control signal (fig. 3) and wherein the selection pulses of the multiplex driving waveform can be arranged in groups selected from clustering together, interleaving with other rows, and a combination of said clustering and said interleaving.

As per claim 11, Masazumi teaches driving waveform(s) that have polarity inversion after each pulse in the driving waveform as claimed (col. 16, lines 29, 30, fig. 13).

As per claim 12, Masazumi teaches voltages opposite in polarity but equal in magnitude that are constantly applied to the liquid crystal layer during the deselect (frame) period (col. 16, lines 52-54).

As per claim 13, Masazumi teaches at least some of the pulses of the driving waveform that are polarity reversed in the frame period by applying positive and negative voltages that are applied alternately (col. 16, lines 61-63).

As per claim 14, Masazumi teaches a method wherein the polarity of a succeeding pulse of the driving waveform is opposite the polarity of the immediately preceding (instant) pulse as claimed (see $\pm V_c/2$ in fig. 16).

As per claim 15, Masazumi teaches a selection pulse for each line (multiple selection lines) wherein the pulses of a succeeding frame periods is different from the instant pulse (see $\pm V_c/2$ in fig. 18).

As per claim 17, Masazumi teaches cases where gray scale is reproduced by varying the voltage value of the waveform(s) (col. 16, line 67 to col. 17, line 1).

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As per claims 18 and 19, Masazumi teaches in the waveform during the reset period a voltage V_{th1} for setting the liquid crystal into the homeotropic state that is first applied for a duration of time t_3 and then the voltage is held below a threshold voltage V_{th2} for a duration of time t_4 for setting the liquid crystal into the planar state. Further, Masazumi teaches a voltage greater than V_{th2} and smaller than V_{th1} to cause the liquid crystal in the planar state to change to the focal conic state. To achieve gray scale levels, the entire reset period $t_3+t_4+t_5$ can be made shorter than t_1 (col. 14, lines 20-41).

As per claim 20, Masazumi teaches a resulting (f) waveform (common waveform) applied to the liquid crystal which is a combination of waveforms as claimed (fig. 5).

Response to Arguments

5. Applicant's arguments with respect to claim 1-3 and 5-20 have been considered but are moot in view of the new ground(s) of rejection.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Laneau whose telephone number is 703-305-3973. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 6:00 PM or via email: ronald.laneau@uspto.gov.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached at 703-305-4709.

7. **Any response to this action should be mailed to:**

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Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding
should be directed to the Technology Center 2600 Customer Service Office whose telephone
number is (703) 306-0377.

Ronald Laneau
Examiner
Art Unit 2674

rl
September 21, 2003



RICHARD WIERPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600